U.S. Application No. 10/561,837 Inventors: Howard GOODMAN et al. Attorney Docket No. 07812.0060-00

Response to Office Action issued August 14, 2009

**AMENDMENTS TO THE CLAIMS:** 

This listing of claims will replace all prior versions and listings of claims in the

application. Please amend claims 1, 8, 11, 23, and 27.

1. (Currently Amended) A particulate clay material which is surface-modified

with at least one organic compound comprising an organic portion and a basic portion,

wherein the particulate clay material has a particle shape factor greater than about 10.

2. (Previously Presented) A particulate clay material according to claim 1,

wherein the organic portion of the organic compound comprises a straight or branched

chain alkyl group having between 8 and 24 carbon atoms.

3. (Previously Presented) A particulate clay material according to claim 1,

wherein the organic portion of the organic compound comprises one or more cyclic

organic groups, which may be saturated, unsaturated or aromatic, and may optionally

include one or more heteroatoms.

4. (Previously Presented) A particulate clay material according to claim 1.

wherein the organic portion of the organic compound includes one or more functional

substituent groups which can favourably interact with a polymer filled using the material.

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- 5. (Previously Presented) A particulate clay material according to claim 1, wherein the basic portion of the organic compound comprises one or more primary amine group NH<sub>2</sub>.
- 6. (Previously Presented) A particulate clay material according to claim 1, wherein the organic compound is selected from hydrogenated-tallowalkyl-amine, organic mono-amines, organic polyamines, melamine, and derivatives thereof in which the organic portion carries at least one functional substituent group which can favourably interact with a polymer filled using the material.
- 7. (Previously Presented) A particulate clay material according to claim 1, wherein the particulate material is in the form of substantially dry particles.
- 8. (Previously Presented) A particulate clay material according to claim 1, having a mean equivalent particle diameter less than or equal to about 4 microns (µm), and a particle shape factor which is greater than about 10.
- 9. (Previously Presented) A particulate clay material according to claim 1, wherein the clay is selected from hydrous kaolin, partially calcined kaolin (metakaolin), fully calcined kaolin, ball clay, talc, mica and any combination thereof.
- 10. (Previously Presented) A method of preparing a particulate clay material according to claim 1, comprising contacting a particulate clay which is not surface-

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modified with the organic compound or compounds with a sufficient quantity of the

organic compound or compounds under conditions whereby the said organic compound

or compounds associate with the particles of the particulate clay to surface-modify the

same.

11. (Currently Amended) A polymer composition comprising a polymer and a

particulate clay filler distributed in the polymer composition, wherein the particulate clay

filler is a particulate clay material which is surface-modified with at least one organic

compound comprising an organic portion and a basic portion, wherein the particulate

clay material has a particle shape factor greater than about 10.

12. (Previously Presented) A polymer composition according to claim 11,

wherein the polymer is a thermoplastic polymer.

13. (Previously Presented) A polymer composition according to claim 11,

which is a flame retardant polymer composition.

14. (Previously Presented) A polymer composition according to claim 11,

wherein the particulate clay filler is present in the polymer composition at a particle

number per unit volume of at least about 1 particle per 100 µm<sup>3</sup>.

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- 15. (Previously Presented) A polymer composition according to claim 11, wherein the clay filler is present in the polymer composition between about 5 and about 200 parts by weight per hundred of polymer.
- 16. (Previously Presented) A polymer composition according to claim 15, wherein the clay filler is present in the polymer composition between about 5 and about 100 parts by weight per hundred of polymer.
- 17. (Previously Presented) A polymer composition according to claim 16, wherein the clay filler is present between about 10 and about 50 parts by weight per hundred of polymer.
- 18. (Previously Presented) A polymer composition according to claim 17, wherein the clay filler is present in the range of 20 to 40 parts by weight per hundred of polymer.
- 19. (Previously Presented) A polymer composition according to claim 11, further comprising one or more components selected from one or more conventional flame retardant component, one or more conventional non-flame retardant component, and combinations thereof.
- 20. (Previously Presented) A polymer composition according to claim 19, wherein the conventional flame retardant component is selected from phosphorus-

containing compounds, boron-containing compounds, metal salts, metal hydroxides, metal oxides, hydrates thereof, organoclays, halogenated hydrocarbons, and any combination thereof.

- 21. (Previously Presented) A polymer composition according to claim 19, wherein the conventional flame retardant component comprises ATH.
- 22. (Previously Presented) A polymer composition according to claim 19, wherein the conventional non-flame retardant component is selected from pigments, colorants, anti-degradants, anti-oxidants, impact modifiers, inert fillers, slip agents, antistatic agents, mineral oils, stabilisers, flow enhancers, mould release agents, nucleating agents, clarifying agents and any combination thereof.
- 23. (Currently Amended) A particulate filler material for a flame retardant polymer composition comprising a mixture of a particulate clay material and one or more further particulate flame retardant components, wherein the particulate clay material is surface-modified with at least one organic compound comprising an organic portion and a basic portion, wherein the particulate clay material has a particle shape factor greater than about 10.
- 24. (Previously Presented) A particulate filler material according to claim 23, wherein the one or more further particulate flame retardant components comprise ATH.

25. (Previously Presented) A process for forming a polymer composition as defined in claim 11, comprising mixing a liquid or particulate solid polymer or one or more precursor thereof with a material according to claim 1 and any other desired components, and - if one or more precursor of the polymer component is present -

subsequently curing the mixture.

26. (Previously Presented) A mixture of a liquid or particulate solid polymer or one or more precursor thereof and a particulate clay material according to claim 1 and optionally any other components of a polymer composition as desired, for subsequent processing to form a polymer composition according to claim 11.

- 27. (Currently Amended) [[An]] <u>A flame retardant</u> article formed from a flame retardant polymer composition according to claim 11.
- 28. (Previously Presented) A sheath, coating or housing for an electrical product, formed from a polymer composition as claimed in claim 11.
- 29. (New) A particulate clay material according to claim 1, wherein the particulate clay material has a particle shape factor greater than about 20.
- 30. (New) A polymer composition according to claim 11, wherein the particulate clay material has a particle shape factor greater than about 20.

31. (New) A particulate filler material according to claim 23, wherein the particulate clay material has a particle shape factor greater than about 20.